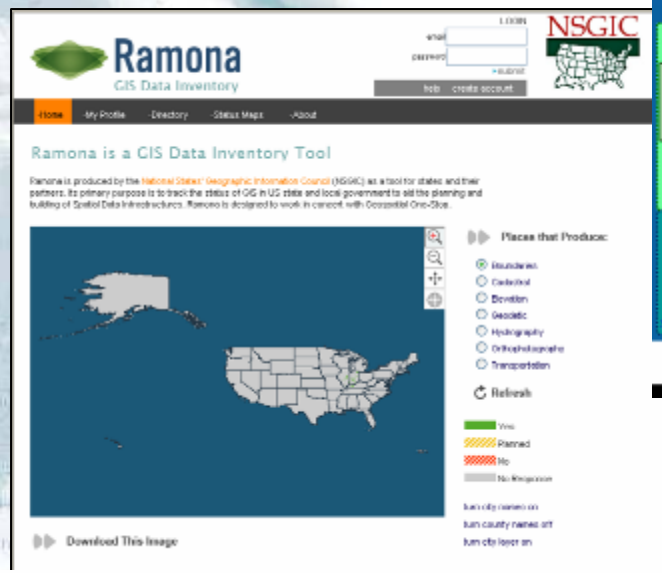
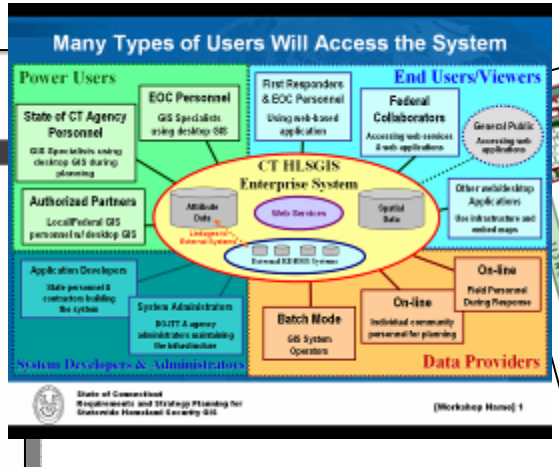
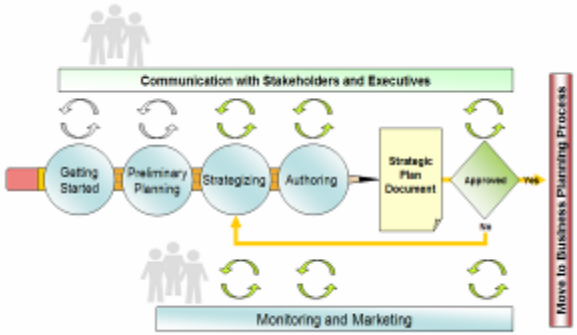
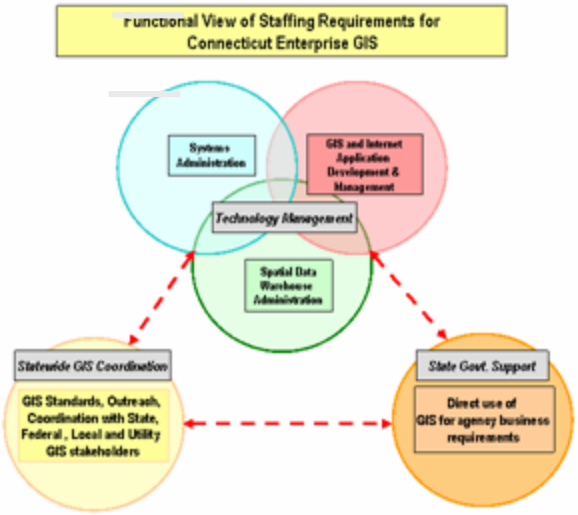
State of Connecticut

Developing Geospatial Strategic and Business Plans for the State of Connecticut









Informational Gathering Sessions

With you today

- **Michael Varney – State of Connecticut - DOIT**
  - Project Manager
  - michael.varney@ct.gov
- **Steve Anderson - AppGeo**
  - Vice President
  - sanderson@appgeo.com
- **Andy Buck - AppGeo**
  - Senior Project Manager
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In the audience…

- State Agencies
- Regional Govt. (RPO/COG's)
- Cities and Towns
- Professional Groups
- Utility Companies
- Business and Non-Profit

Why is Connecticut developing a strategic plan?

- Putting forward a **shared vision** for specific projects, priorities and funding requests will **improve the chances of success**
- Documenting and publicizing current use of GIS will lead to **increased awareness** which will in turn increase use, maximize benefits and lead to more support
- A plan will help the State **improve coordination** and **avoid redundant efforts**

1. Finding ways to **share technology and expertise** allows the State to avoid re-inventing the wheel and accelerates technology deployment
2. **Sharing data is very cost-effective**, since GIS data are expensive to create and easy to share
3. Cooperative partnerships for development of data will provide the greatest benefit, **increasing the quantity and quality of data** available to all stakeholders will increase overall support and effectiveness of the program.

How is it being done?
Project Approach and Overview

- **Kickoff Meeting**
  - Refine approach to Connecticut specifics
- **Five Steering Committee Meetings**
  - Steering Committee Comprised of members of CT GISC
    - (State, Regional, and Local Government Participants)
  - First three have taken place
  - Used to identify programmatic goals (six areas have been identified)
- **Four Information Gathering Sessions**
  - Group Visioning sessions
  - Goal clarification or identification
  - Define needs at all levels of government
- **Geospatial Council Mtgs (business meetings)**
  - Report and Track progress
  - Gauge degree of consensus
  - Make final decisions and adopt plan
- **Authoring Strategic Plan and One Business Plan**
  - Use NSGIC's prescribed format
  - Accurately articulate the vision for
- **On-Line Survey**

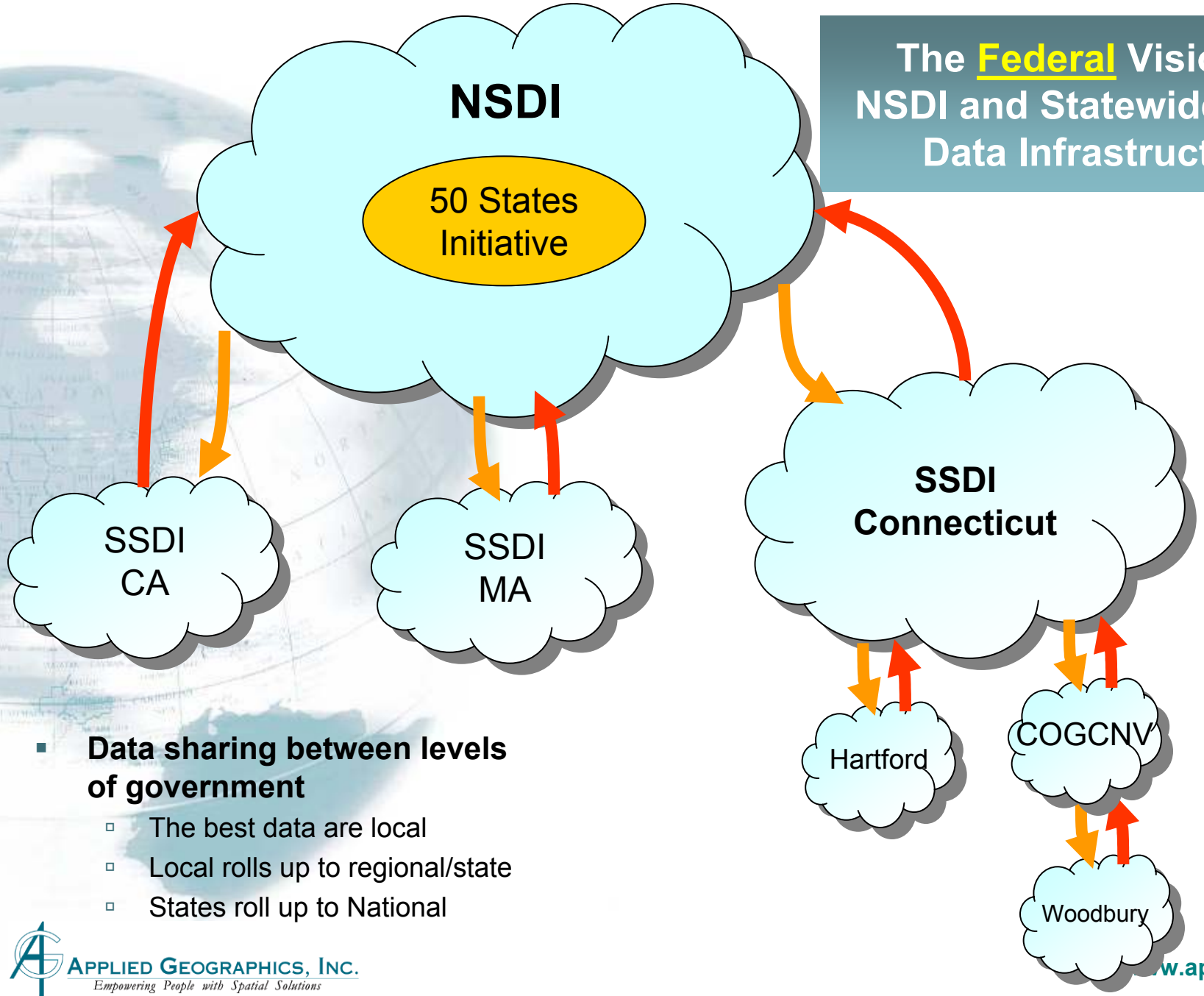
On-Line Survey

- **General Contact Information**
- **GIS Background and Use:** Industry, Duration, Staffing, End Users
- **GIS Software Inventory:** Desktop, Server, Field, RDBMS
- **Network Capability:** Web Presence, Connectivity
- **Data Usage & Needs:** Orthos, Parcels, Planimetrics, etc
  - Methods used to create
  - Cost to create
  - Methods used to maintain
  - Availability
  - Importance
- **Funding and Policies:** GIS Expenditures, Policies in place
- **GIS Training:** Training needs, State involvement
- **State Outreach Program:** What services should be provided?
- URL: Link off of: **http://www.ct.gov/gis/site/default.asp**

Relevant Federal Initiatives

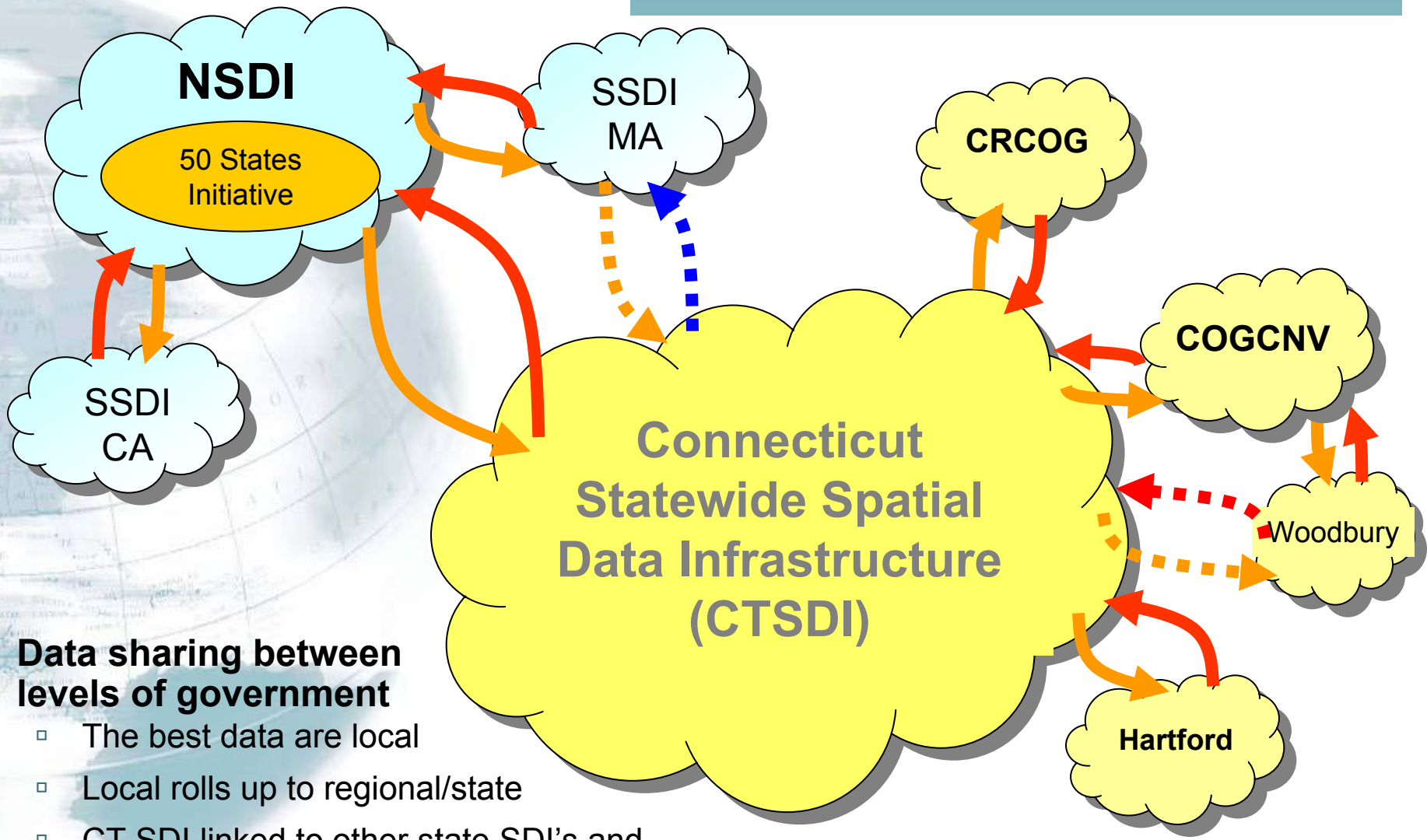
- **National Spatial Data Infrastructure (NSDI)**
  - Nationwide compilation and integration of data for 7 framework layers
    - Cadastral (parcels)
    - Political Boundaries
    - Hydrography
    - Imagery (orthos)
    - Elevation (orthos)
    - Transportation (Air, Roads, Inland Waterways, Rail, Transit)
    - Geodetic control
- **50 States Initiative**
  - Activities to catalyze development of NSDI
  - Provided grant funding for this project
- **Geospatial One-Stop / National Map**
  - Portals for access to nationwide data

The Federal Vision for: NSDI and Statewide Spatial Data Infrastructures



- **Data sharing between levels of government**
  - The best data are local
  - Local rolls up to regional/state
  - States roll up to National

State Centric Perspective
Statewide Spatial Data Infrastructures & NSDI



- **Data sharing between levels of government**
  - The best data are local
  - Local rolls up to regional/state
  - CT SDI linked to other state SDI's and National SDI

50 States Initiative CAP Grant Program

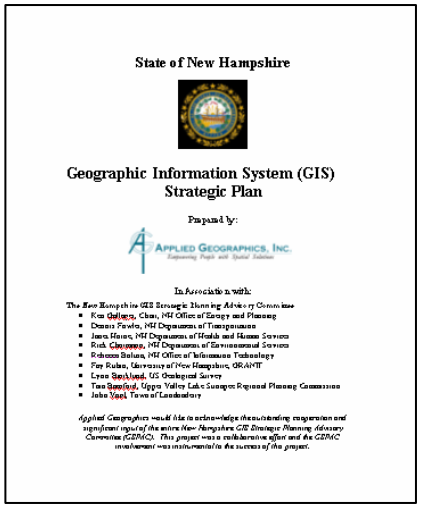
- **FGDC** wants to create a National Spatial Data Infrastructure **(NSDI)**
- State Spatial Data Infrastructure **SSDI's** are **critical** to success of NSDI
- **States** need to **self-assess** and develop **a strategic plan**
- Strategic **planning** will aid **process**
- **FGDC will Support** Strategic Planning via CAP **grants**
- BUT, FGDC wants strategic **plans** to be **similar** in structure
  - Allowing state-by-state **comparison/contrast**
- In partnership with **NSGIC** they created **templates**

50 States Initiative
9 criteria of a successful statewide GIS program

1. A full-time, **paid coordinator position is designated** and has the authority to implement the state's business and strategic plans
2. A clearly defined **authority exists for statewide coordination** of geospatial information technologies and data production
3. The statewide coordination office has a **formal relationship with the state's Chief Information Officer (CIO)**
4. **A champion** (politician, or executive decision-maker) is aware and involved in the process of geospatial coordination
5. **Responsibilities** for developing the National Spatial Data Infrastructure and a State **Clearinghouse are assigned**
6. The ability exists to **work and coordinate** with local governments, academia, and the private sector
7. **Sustainable funding** sources exist to meet project needs
8. GIS Coordinators have the authority to enter into contracts and become capable of **receiving and expending funds**.
9. The **Federal government works through** the statewide coordinating authority

The NSGIC Templates
The one-two punch of Strategic and Business Plans

- **One** Strategic Plan, potentially **many** Business Plans
- **Strategic Plan**
  - **What** and **Why**
  - Vision & Goals
  - The “big picture” and overall context
- **Business Plan**
  - **How, When**, and **How Much**
  - Aimed at those that approve and fund
  - Details of initiative(s) emerge
  - Presented as a business case


State of New Hampshire

Geographic Information System (GIS)
Strategic Plan

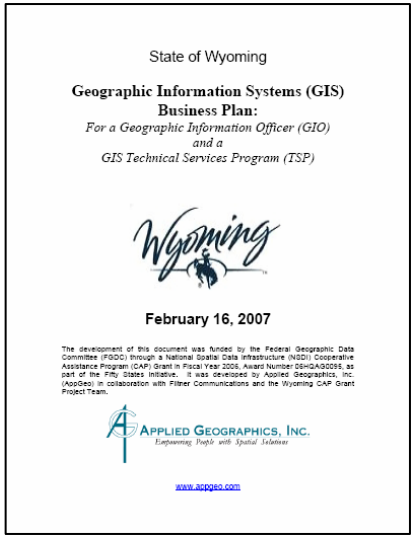
Prepared by:

Applied Geographics, Inc.

In Association with:

The New Hampshire GIS Strategic Planning Advisory Committee
- Ken Gallaro, Chair, NH Office of Energy and Planning
- Dennis Fowler, NH Department of Transportation
- Jason Hoyer, NH Department of Health and Human Services
- Rick Claytonpo, NH Department of Environmental Services
- Rebecca Bolton, NH Office of Information Technology
- Fay Rubin, University of New Hampshire, GRANIT
- Lynn Saville, US Geological Survey
- Tom Botsford, Upper Valley Lake Sunapee Regional Planning Commission
- John Vogl, Town of Londonderry

Applied Geographics would like to acknowledge the outstanding cooperation and significant input of the entire New Hampshire GIS Strategic Planning Advisory Committee (GSPAC). This project was a collaborative effort and the GSPAC involvement was instrumental to the success of the project.


State of Wyoming

Geographic Information Systems (GIS)
Business Plan:
For a Geographic Information Officer (GIO)
and a
GIS Technical Services Program (TSP)

Wyoming

February 16, 2007

The development of this document was funded by the Federal Geographic Data Committee (FGDC) through a National Spatial Data Infrastructure (NSDI) Cooperative Assistance Program (CAP) Grant in Fiscal Year 2006, Award Number 06HQAG0056, as part of the Fifty States Initiative. It was developed by Applied Geographics, Inc. (AppGeo) in collaboration with Filtrer Communications and the Wyoming CAP Grant Project Team.

Applied Geographics, Inc.
Empowering People with Spatial Solutions

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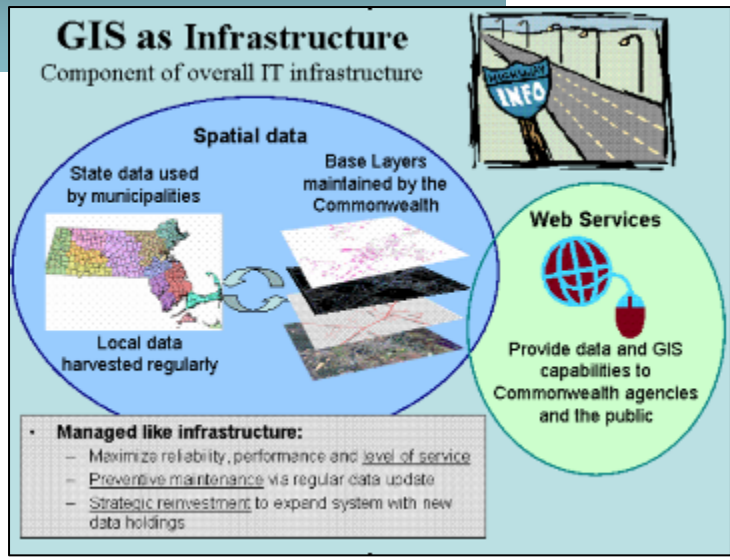
What are some things other states have tried to achieve?
What are their goals and vision?



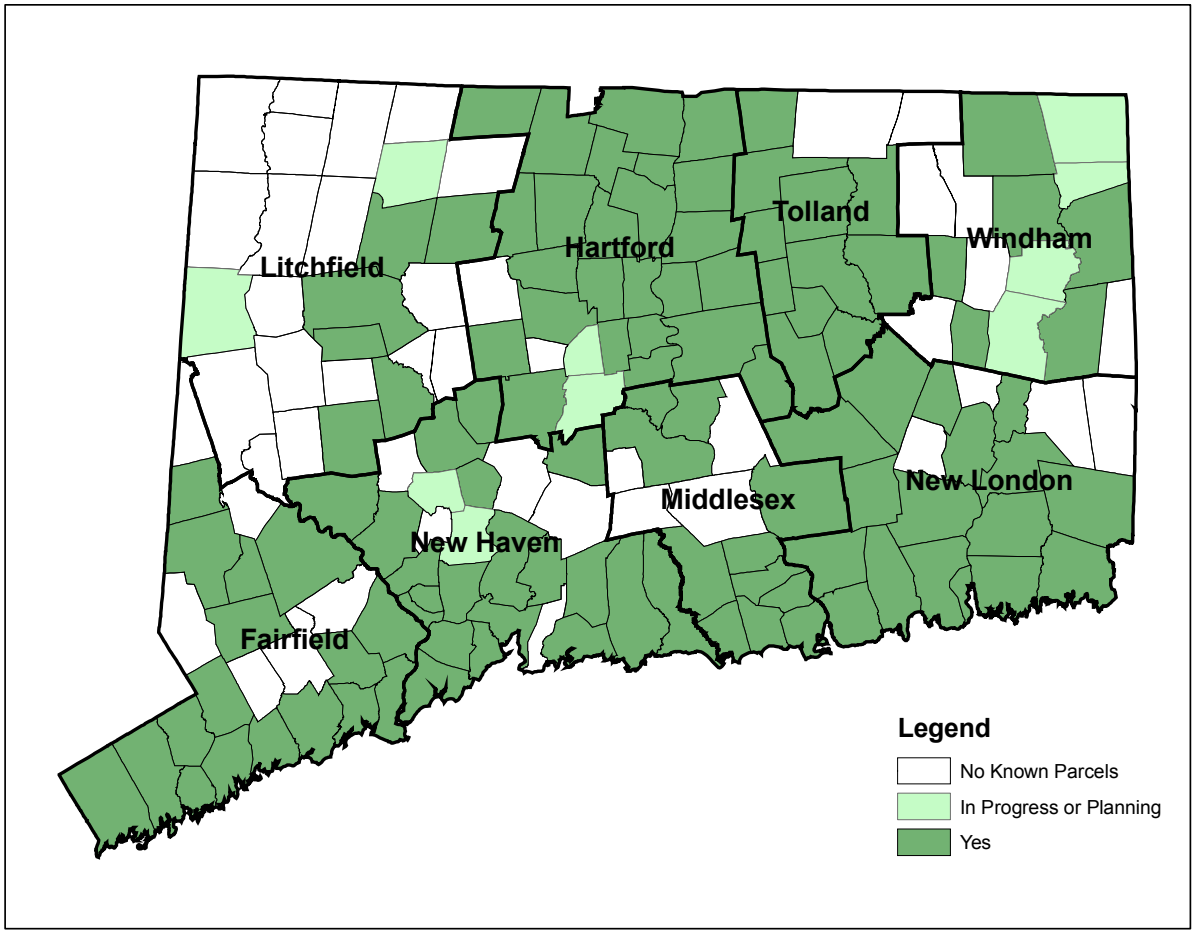
- ✓ **Development and sustainable maintenance of statewide data layers**
  - ✓ The **Massachusetts** plan is focused on **4 key data layers** and **data infrastructure**
    - ✓ Orthos
    - ✓ Parcels
    - ✓ Addresses
    - ✓ Critical infrastructure
    - ✓ Interaction with local government is key to the plan
    - ✓ Managed like infrastructure
- **GIS Governance Evolution**
  - The **New Hampshire and Wyoming** plans are centered on the creation of a Geographic Information Officer (GIO) title and a GIS Office
  - The **Massachusetts** plan recommends a move from Environmental Affairs to the Information Technology Department
- **Capitalizing on New Technology**
  - The **Rhode Island** plan is focused on building a multi-departmental enterprise architecture with data warehousing and web services

Where is Connecticut?

- **Muni GIS Compared with other New England States**
  - Extent of GIS adoption
    - Based on digital parcel layer (>65%)
  - Public access to GIS data, esp. on-line (<25%)
- **Compared Nationally**
  - Connecticut is comparatively data-rich, statewide
  - Lack of county government presents challenges for coordination
- **In relation to the Federal Government**
  - Need better coordination
- **State Government GIS**
  - Strong departmental programs: DEP, DOT, DEMHS, etc.
  - Statewide coordination has been lacking until recently

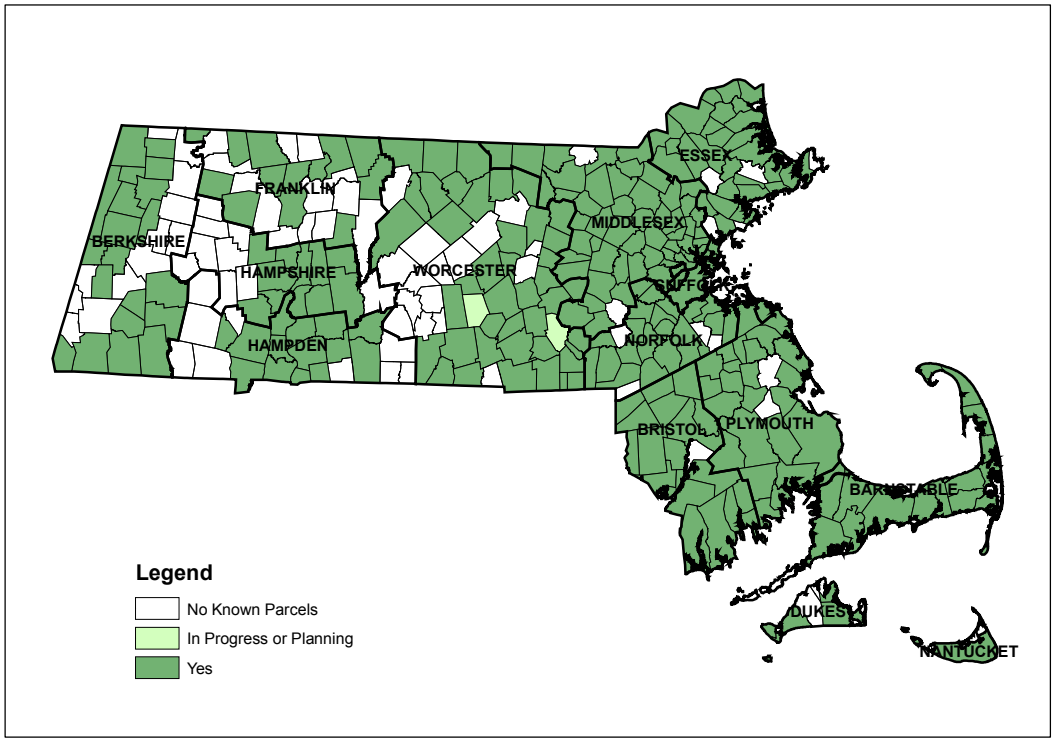
Where is Connecticut, 67%+/- have parcels.

Map of Parcel Coverage for the State of Connecticut

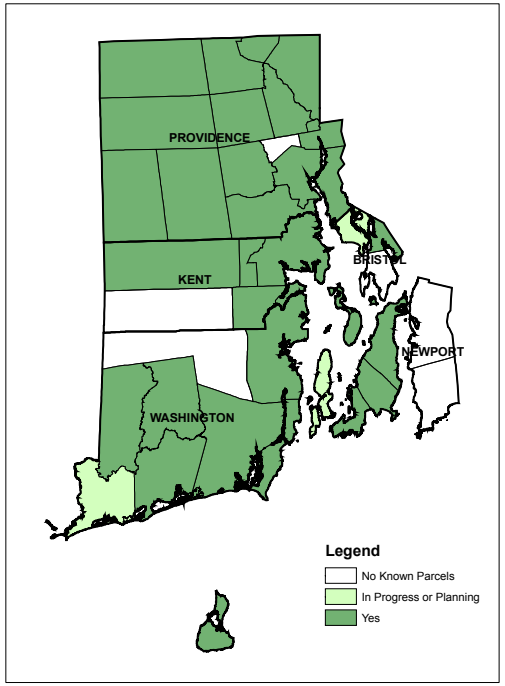


Where is Connecticut? Compared to other states…

Map of Parcel Coverage for Commonwealth of Massachusetts



Map of Parcel Coverage for the State of Rhode Island



MA = 81%

RI = 62%

Break #1

What is the evolving *Strategic* Vision for the State of Connecticut?

Many agencies have made large investments in GIS.

How can CT GIS be sustained?

How can CT GIS be more effective?

Emerging themes:

1. **Organize GIS efforts across the State and Local Government agencies**
   - Improve ***coordination*** and avoid redundant efforts
   - Help set ***priorities*** to target funding initiatives
   - Provide geospatial ***guidance***, share technology and expertise
2. **Develop a data sharing framework**
   - Creating data is expensive, ***Sharing*** data is very cost-effective
   - Cooperative ***partnerships*** increase quantity, quality and effectiveness of data available
   - ***Deliver*** a core set of data layers
   - ***Infrastructure*** to share across state agencies and local municipalities
3. **Communicate, educate and market the benefits of GIS**
   - Increased ***awareness*** will increase use, maximize benefits and lead to more support
   - Relate GIS funding requests to specific statewide ***initiatives***
   - Identify and build relationships with multiple ***champions***

What are the Programmatic Goals for Connecticut?

Six categories of issues to deal with…

1. **Organizational Issues**
   - Create GIS Coordination office
     - Decentralized versus centralized model preferred
     - Fully staffed and dedicated to GIS – need to define
2. **Funding Related Issues**
   - Create sustainable funding source
   - Become/remain eligible for Federal funding
   - Small local government entities lack staff and financial resources to develop their own GIS
3. **Data Related Issues**
   - Create a SSDI and support NSDI
   - Create standards for data layer development
   - Efforts need to be coordinated with other local government efforts
   - Create framework data layers
     - Orthos
     - Street Centerlines
     - Parcels
     - Address Points

What are the Programmatic Goals for Connecticut?

Six categories of issues to deal with…

4. **Infrastructure**
   - Create a state clearinghouse
   - Base infrastructure being established by DEMHS project
   - Data is currently stored in disparate departmental agencies – federated system approach
5. **Enlist a high-level GIS Champion(s)**
   - Executive Level – Lt. Governor
   - Departmental – CIO, Commissioners
   - Political – tie to "hot topics" or initiatives
     - (Smart growth, Brownfields, Economic Development, Heath Care, Education, Homeland Security, Public Safety, Streamlined Sales Tax, Water Systems)
   - Multiple Champions will be necessary
6. **Communication and Marketing**
   - Educate decision makers
   - Use plain English, not technical jargon and acronyms
   - Build awareness for current uses of GIS

- **Other Issues**
  - To generally "advance" GIS in the state

Programmatic Goal

3. Creating framework data layers

- **Focus on 4 Key Data Categories:**
  1. Orthophotos (aerial photography)
  2. Parcels
  3. Street Centerline
  4. Address Points
- **Introduction covering:**
  - Current status
  - Future vision
  - Issues & opportunities
- **Interactive discussion –**

  WE want to hear from YOU!

Orthophotos
Current Status:

- **2004 Statewide Imagery Program**
  - 0.8’ resolution (~9.6 in.)
  - 1” = 200’ Scale (+/- 4-5’ spatial accuracy)
  - Black and White Photography
- Other Options
  - **SBC/SNET/AT&T**
    - 6” Resolution
    - 1” = 200’ Scale
    - Color Photography
    - Limited Planimetrics (Road cl’s, hydro, bldgs)
    - License Restrictions
  - **Individual or Regional Flights**
    - “Buy up” through SNET/SBC/AT&T (South Windsor & Others)
    - High Resolution Flights (Stamford, Greenwich, Newtown, Mansfield, etc)
    - Regional Flights (MDC)
      - Increased Resolution and/or accuracy
      - Typically 1” = 100’ or 1” =40’, 3-6” Resolution
      - Planimetrics (roads, sidewalks, structures, etc)

Orthophoto - Applications

Land Use Update with 4 band Imagery

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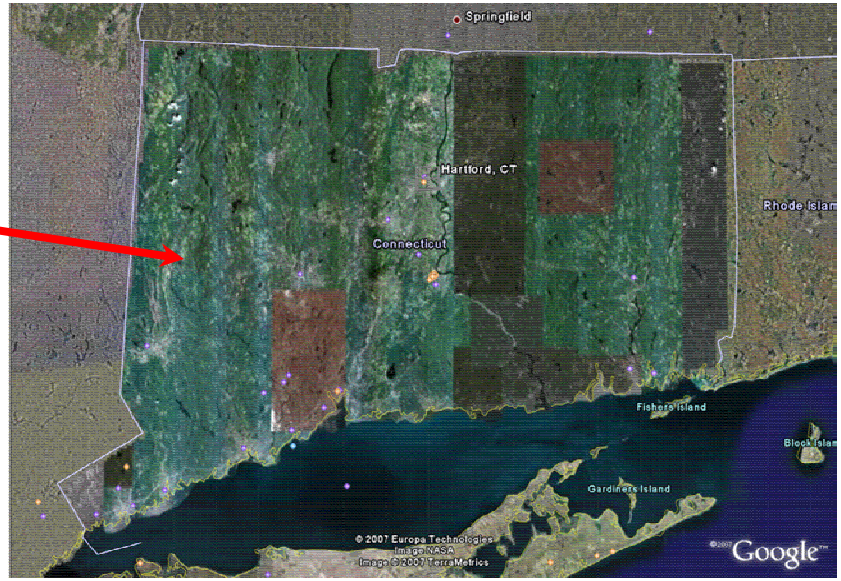
Orthophotos
Future Vision:

- Regularly scheduled and funded re-flights
  - New digital multi-spectral imagery acquired **every 5 years**
  - Participate in USGS Imagery for the Nation program
  - Offer “buy-up” program for other organizations in contract
- Improved orthophoto products
  - **Enhanced resolution**
  - Color versus black and white
  - Derivative products from image processing
    - Impervious surfaces
    - Land cover
- Improved elevation data and contours
  - Support **2 ft. – 5 ft. contours**
  - Statewide LiDAR

Orthophotos
Issues & Opportunities:

- Doesn't meet all local needs either for resolution or accuracy
- Expense of imagery – cost sharing
- Integrating local data into statewide coverage
  - Mosaic a la Google
  - Better resolution
  - Currentness
  - Protection of local interests in data



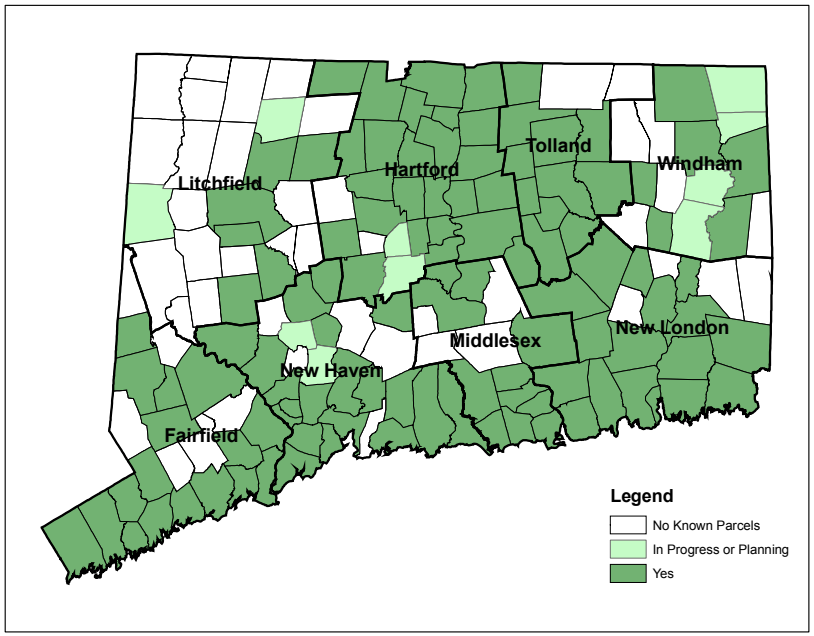
Orthophotos:
Discussion

- How would they be used?
- What scale/accuracy/coverage is needed?
- How often do they need to be flown?
- Who should pay? Cost sharing?
- Can we aggregate local data?
- What role should the state play?
- Who should decide?

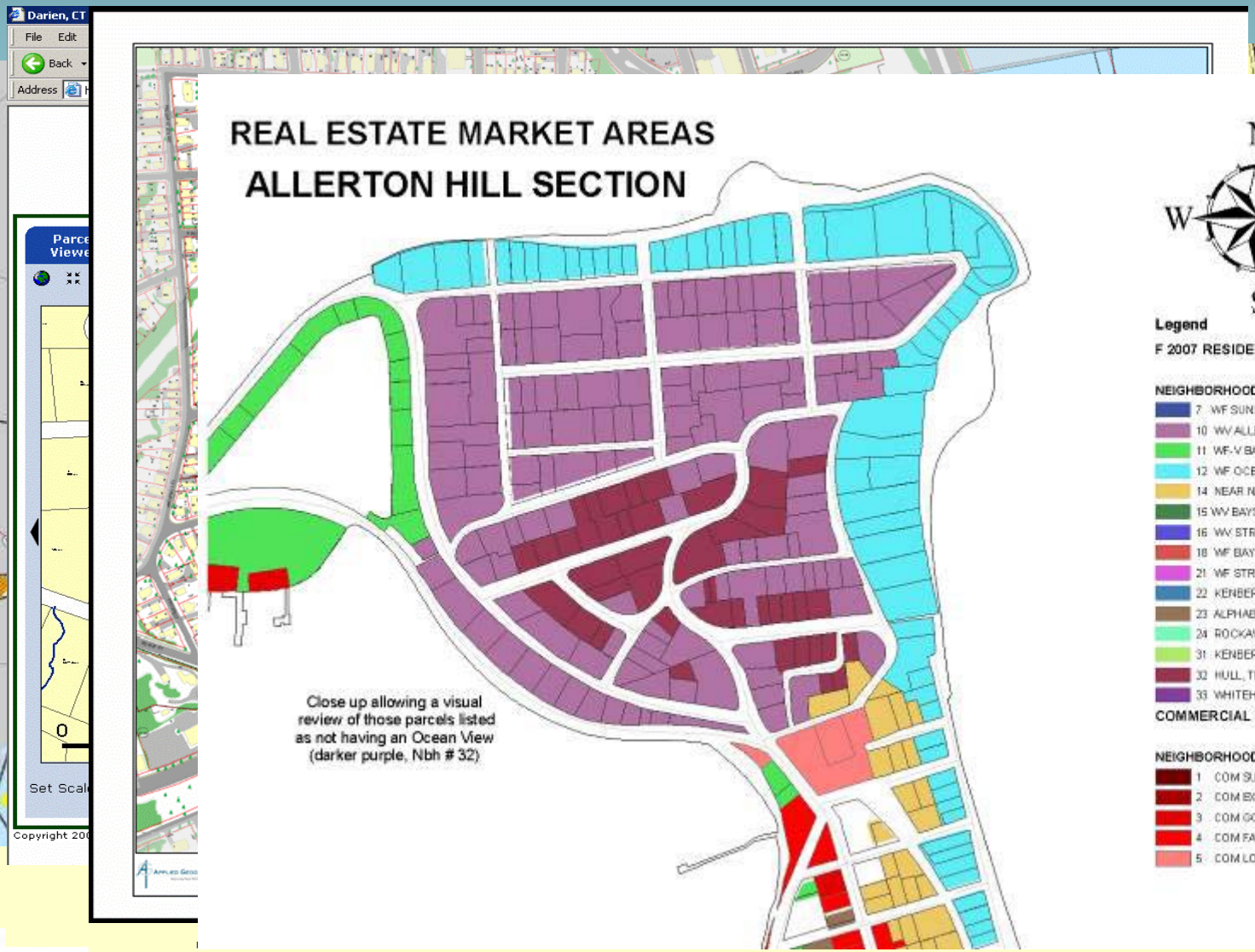
Parcels
Current Status

- Parcel data are developed and managed at the local level
- Electronic parcel data exists for >65% of the State
- No digital parcel standards
- Neighboring States, MA, RI, and NY:
  - All have parcel standards
  - All have parcel conformance grant programs
    - Establish
      - Baseline spatial accuracy
      - Attribute consistency

Map of Parcel Coverage for the State of Connecticut

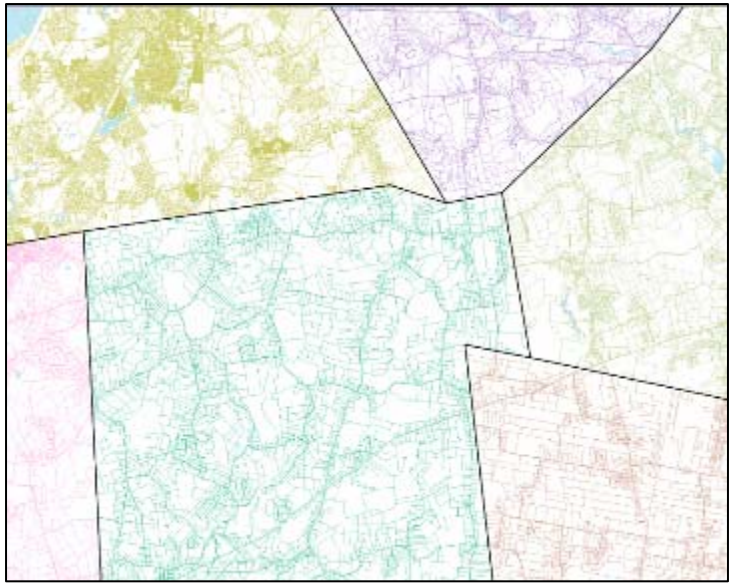


Parcels: Applications



Neighborhood Analysis for Valuation

Parcels
Future Vision



- **Statewide parcel layer is developed**
  - Use of standards makes this feasible
  - State funding helps standardize those that have created parcels or "finish the job" for small communities
- **All communities maintain parcel data & share edits**
  - Technical assistance from RPOs or private sector
  - Automated replication
  - Local interests in data are protected
- **Statewide parcel data support a variety of applications**
  - Integration with official land records
  - Accurate mapping of any address
    - Critical infrastructure identification
    - 911 Response
  - Land use planning and smart growth
  - Conservation planning
  - Economic development – site-finder applications
  - Etc.

Parcels
Issues & Opportunities

- 3 levels of government are involved:
  - **Local** government as tax parcel mapping managers
  - **Regional** RPO's as consolidators for regional planning activities
  - **State** government
    - Roll-up for statewide analysis and distribution
    - Potential for state-level technical resources & funding
- Preserve the distinction between:
  - **Legal property boundaries** (based on deeds, surveys, and field work)
  - **Assessor's tax parcel mapping** (approximate)
  - **Combination** of both appears to be the de facto standard:
    - So far, per survey, all parcel updates being done using **COGO**
- Understanding **local interests** in managing and distributing their parcel data
  - How to support the local role
  - Make data available to all levels of government
  - Address concerns about distribution, web access, currentness etc.

Parcels:
Discussion

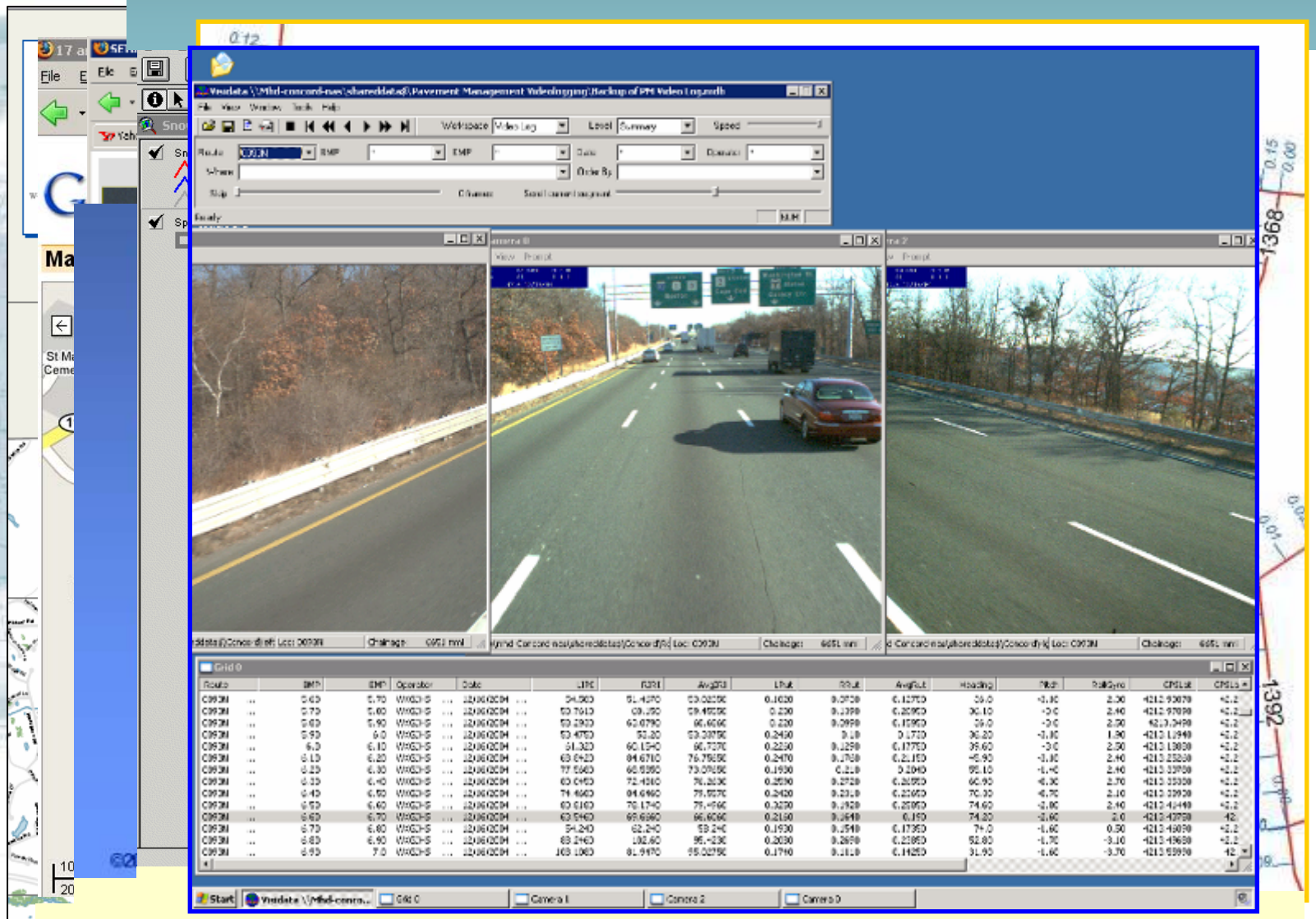
- Do you have a digital parcel base?
- What method was used to create it?
- What is the relative accuracy of the layer?
- What method is used for updates (digitized surveys, COGO)?
- What is the best way to aggregate local data?
- What role should the state play?
- How should we address local concerns?

Break #2

Roads & Addresses
Current Status

- **Multiple Statewide road centerlines exist**
  - TANA: Managed by DPS
    - Commercial product licensed by State of Connecticut
    - Delineation of updates requested from municipalities
      - Some communities do; some communities don't
    - TANA then incorporates updates
    - All government agencies have access to this data
  - DOT:
    - State Roads
    - Route and mile markers
    - No address ranges
  - SBC/SNET/AT&T
    - Statewide coverage
    - High-level of spatial accuracy (200 scale)
    - No address ranges or mile markers – conflation?
  - Individual Municipalities
    - Many muni's have there own centerline layers
    - Managed locally and updated annually
- **Statewide address range data exists**
  - State license of TANA data provides address range data
  - Enables statewide geocoding
  - New DEMHS/Enterprise System being stood up with geocoding service

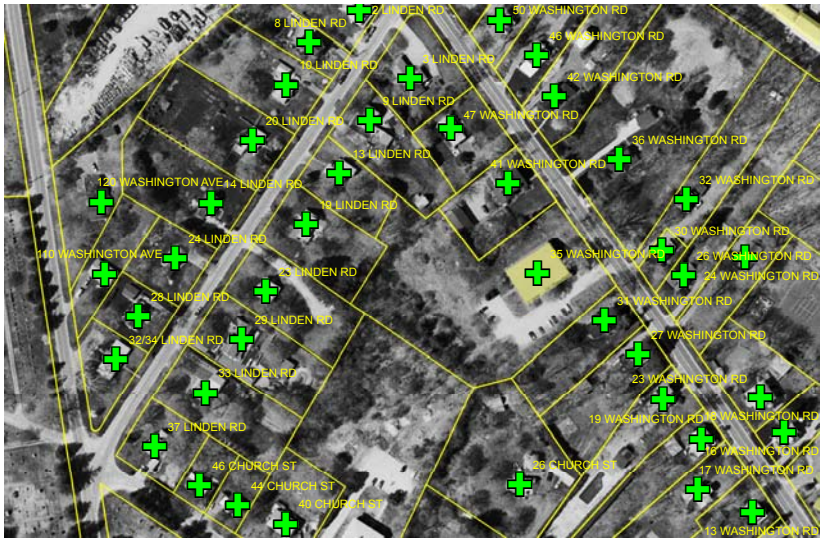
Roads & Addresses: Applications



Video Logging

Roads & Addresses
Future Vision

- **GISC Data Workgroup subcommittee looking in detail at this**
- **Road centerline improvements**
  - Establish single, uniformly accurate, and complete, centerline layer
  - DPS/DOT take over management of core linework
  - Updates flow “seamlessly” in from municipalities on a regular basis through web site interface
  - Municipalities add their own details on top of core, shared geometry
    - Municipal attribute tables linked via unique ID number
- **Addressing improvements**
  - Move from “address ranges” to “address points”
    - Enabling improved location reliability
    - Potential for “structure based” location points
  - Incorporate address locations from parcels
  - Conflation of DOT data for Linear Referencing System



Roads & Addresses
Issues & Opportunities

- **Requirement for complex coordination**
  - DPS/DOT manage core geometry, segment numbering & LRS
    - Standards to ensure consistency
  - Municipalities manage and submit updates on a regular basis
    - Communities that do not use GIS still benefit
  - DPS manages the integration of addressing into 911 system
- **All parties benefit from access to rich, accurate and current road and address data**

Roads and Addresses:
Discussion

- Does your municipality submit updates to DOT?
- Do you have address points?
- How would you use address points?
- What are the benefits to you of a state wide address layer?
- What is the best way to aggregate local data?
- What role should the state play?
- What are the local concerns about road/address data?

Other Questions & Further Discussion

If we've missed any items…

- **What would be the most important suggestion you would make for improving GIS coordination in Connecticut that we haven't talked about today?**

- **GIS technology & infrastructure issues**
- **Gaining support & recruiting a GIS Champion**
- **Communication & marketing strategies**

Thank-you… questions please contact…

- **Michael Varney – State of Connecticut - DOIT**
  - Project Manager
  - michael.varney@ct.gov
- **Steve Anderson - AppGeo**
  - Vice President
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  - Senior Project Manager
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Don't forget to do your survey!: Link off of GISC site:

http://www.ct.gov/gis/site/default.asp